

# TECHNICAL MEMORANDUM

## Utah Coal Regulatory Program

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September 15, 2005

TO: Internal File

THRU: D. Wayne Hedberg, Permit Supervisor

THRU: Joe Helfrich, Team Lead, Environmental Scientist III, Biology

FROM: Jerriann Ernstsens, Ph.D., Environmental Scientist, Biology

RE: Reformat and Digitization, CO-OP Mining Company, Bear Canyon Mine, Permit C/015/0025, Task ID #2114

### **SUMMARY:**

On December 29, 2004 the Permittee resubmitted their Mining and Reclamation Plan (MRP) that follows current the Utah Division of Oil, Gas, and Mining (Division) format requirements. The Division informally sent the list of deficiencies for #2114 to the Permittee. The Permittee sent additional information to address these deficiencies. Jerriann Ernstsens prepared a memo (jae2114eMRP BioLand) for the December 29, 2004 submittal and prepared this memo (jae2114eMRP BioLand 2) following all the informal submittals since December 29, 2004.

The Public Information Center (PIC) will file an electronic copy and hardcopy of the newly formatted MRP. The PIC still has a hardcopy of the older formatted MRP, but the PIC staff will pull this copy in the superseded file. There is no Confidential Binder as of 9/15/05, but the Permittee will prepare this binder (on 9/19/05) pulling and scanning confidential appendices from the older formatted MRP and changing confidential text only from the newly formatted MRP.

The Bear Canyon Mine should be given a significant amount of credit for submitting the first electronic copy of their MRP (eMRP) to the Division. This innovative step forward should set a positive example for the rest of the mining community to follow. Providing the Division with an electronic format should help expedite the reviewing process. A few helpful functions include:

- Easily viewed maps
- Search (find) functions
- Hyperlinks to tables, figure, and maps.

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The Permittee consolidated biology-related information from Chap. 9 and 10 of the older formatted MRP into Chap. 3 of the newly formatted MRP (both electronic and hardcopy versions). All related vegetation and wildlife tables, figures, plates, and appendices now have a number “3” prefix.

The Division did not conduct a technical review of biology-related sections. This review of the newly formatted MRP only addresses editorial concerns created during the reformatting process of the MRP and adding an electronic version of the MRP. During this review, however, the Division noted certain technical concerns (underlined text) that are unrelated to reformatting of the MRP. These concerns were not listed as deficiencies, but some were discussed in the text and Findings sections of this review. In the near future, the Division will request the Permittee to address these concerns.

**TECHNICAL ANALYSIS:**

## GENERAL CONTENTS

### PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

The MRP-Part B meets the requirements of R645-301-121.100, R645-301-121.200, and R645-301-121.300 for the Biology Chapter and Archeology Section because the Permittee presents current, clear, and concise information that follows Division format.

The following table shows the appendix numbers from the older and newly formatted MRPs, titles of appendices, and numbers of pages in each appendix: *Italicized text indicates issues with appendices tables, figures, or plates that the Permittee will address prior to approval.*

NEW FORMAT	OLD FORMAT	TITLE	NUM OF PGS
Appendix 3-A	Appendix 9-A	Vegetation analysis - reference area	35
Appendix 3-B	Appendix 9-B	Miscellaneous data	6
<i>Not included</i>	<i>Appendix 9-C</i>	<i>Vegetation monitoring</i>	
Appendix 3-C	Appendix 9-D	Shower house pad veg. and reference area	29
Appendix 3-D	Appendix 9-E	Tank seam access road vegetation	21
Appendix 3-E	Appendix 9-F	Vegetation studies for the fed. lease area	15
Appendix 3-F	Appendix 9-G	Vegetation sampling in the wild horse ridge area	40
Appendix 3-G	Appendix 9-H	Vegetation sampling in the wild horse ridge tank seam area	33
<i>Appendix 3-H</i>	<i>Proposed</i>	<i>Morland vegetation study</i>	

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	<i>submittal</i>		
Appendix 3-I	Appendix 10-A	Fish and wildlife resource information	36
Appendix 3-J	Appendix 10-B	Mitigation and impact avoidance procedure, general to all	17
Appendix 3-K	Appendix 10-C	Vertebrate species of southeastern Utah	73
Appendix 3-L	<i>Not included</i>	<i>Wildlife survey information</i>	21

The following table shows the older and newly formatted MRP table numbers and titles:

NEW FORMAT	OLD FORMAT	TITLE
Table 3-1	Table 9.3-1	Vegetation types
Table 3-2	Table 9.2-1	Vegetation reference areas
<i>Table 3-3</i>	<i>Not included</i>	<i>Recommended seed mix for interim reclamation</i>
Table 3-4	Table 9.5-1	Revegetation schedule
Table 3-5	Table 9.5-2	Recommended seed mix for riparian-creek bottom
<i>Table 3-6</i>	<i>Table 3-7</i>	<i>Recommended seed mix for pinyon juniper grass</i>
<i>Table 3-7</i>	<i>Table 3-8</i>	<i>Suggested proportions of tack to fiber</i>

Tables 3-3, 3-6, and 3-7 are new submittals.

The following table shows the older and newly formatted MRP figure numbers and titles:

NEW FORMAT	OLD FORMAT	TITLE
Figure 3-1	Figure 10-1	Endangered mammalian species in relation to permit area
Figure 3-2	Figure 9-19	Correct planting procedures
Figure 3-3	Figure 9-20	Seedling storage

The following table shows the older and newly formatted MRP plate numbers and titles:

NEW FORMAT	OLD FORMAT	TITLE
Plate 3-1	Plate 9-1	Vegetation map
Plate 3-2	Plate 10-1	Wildlife use area
Plate 3E-1	Plate 9F-1	Vegetation resources map for federal lease area

Also pertaining to Biology, Plate 5-3b shows the raptor nests.

### Findings:

The Division considers information in the application adequate to meet the minimum requirements of Permit Application Format and Contents section of the General Contents regulations.

## REPORTING OF TECHNICAL DATA

Regulatory Reference: 30 CFR 777.13; R645-301-130.

### Analysis:

The newly formatted MRP contains the appendices described below.

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Appendix 3-A contains several sections:

- Vegetation analysis of reference area conducted by Mel Coonrod in 1982/3.
- Vegetation “sampling” of tank seam access road reference area by Patrick Collins in 1993.
- Color Photograph.
- Raw Data.
- Statistical Analysis.
- Figures.
- Tables: 3A-1, 3A-2, 3A-3, 3A-4, 1, 2, 3, and 4.
- Letter from USDA Soil conservation service – Productivity for Shower House Pad and Tank Seam reference areas, which is duplicated in Appendix 3-B and is not listed in the table of contents for Appendix 3-A. This letter is more appropriately located in Appendix 3-B than 3-A..

Appendix 3-B contains:

- Letter from USDA Soil conservation service – Productivity for Trial and Bear Canyon reference areas.
- Letter from MEC – TES
- Letter from USFS – Plant spp.
- Letter from Bob Thompson (USFS) – Plant spp.
- Letter from USDA Soil conservation service – Productivity for Shower House Pad and Tank Seam reference areas.

Appendix 3-C is an evaluation of the existing vegetation in the area of the shower house pad and information on the reference area for the shower house pad. Patrick Collins conducted the vegetation survey in October 1992 for the shower house pad and September 1993 for the reference area.

Appendix 3-D is an evaluation of the pre-disturbed vegetation in the area of the tank seam access road and pad and a comparison of the data to data collected for the selected reference area. Patrick Collins conducted the vegetation survey in October 1992 and July 1993.

Appendix 3-E is an evaluation of canyon Sweetvetch (*Hedysarum occidentale* var. *canone*) and the plant communities on the federal lease area. Patrick Collins conducted the vegetation evaluation in August 1997.

Appendix 3-F is a vegetation evaluation of the proposed disturbed area in Wild Horse Ridge and the reference area. Patrick Collins conducted the evaluation in 1996.

Appendix 3-G is a vegetation evaluation of the proposed disturbed area in Wild Horse Ridge and the reference area. Patrick Collins conducted the evaluation in 2001.

Appendix 3-H is pending until the Permittee submits the amendment for the Morland area.

Appendix 3-I is an overview of the wildlife for the area (unknown sources and dates).

Appendix 3-J is an overview of the mitigation and impact avoidance procedures general to all wildlife for the area (unknown sources and dates).

Appendix 3-K is the publication “Vertebrate Species of Southeastern Utah” (publication No. 78-16). Several agencies and prepared the publication (date unknown).

Appendix 3-L is the chronology and results of raptor surveys. The Permittee conducted raptor surveys in “1998, 1991, 2000, 2001, and 2002 due to the addition of the WHR area”.

The older formatted MRP states that Appendix 9-C will be incorporated after 1991 (pg. 9-10A and Appendix title page). The Permittee, however, has not incorporated this appendix/information in either the older or the newly formatted MRPs. The older formatted MRP states that aerial photographs will be taken and evaluated every 5 years starting in 1991, the photos will be available upon request, and the results will be incorporated into Appendix 9-C. In the near future, the Division will request the Permittee to clarify the reason for the omission of ‘Vegetation Monitoring’ (Appendix 9-C) information.

### **Findings:**

The Division considers information in the application adequate to meet the minimum requirements of Reporting of Technical Data section of the General Contents regulations. In the near future, the Division will also request the Permittee to clarify the reason for the omission of ‘Vegetation Monitoring’ (Appendix 9-C) information. This issue does not relate to reformatting of the MRP, therefore, DOGM did not include it as a deficiency for this amendment.

## **ENVIRONMENTAL RESOURCE INFORMATION**

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

## **HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.12; R645-301-411.

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**Analysis:**

The Permittee renumbered App. 5-A to App. 4A. Senco Phenix Company conducted this survey in 1984. The title of the survey is: "Archeological sampling survey of the bear canyon mine lease extension performed for the bear canyon/co-op mine through environmental industrial supply".

**Findings:**

The Division considers information in the application adequate to meet the minimum requirements of Historic and Archeological Resource Information section of the Environmental Resource Information regulations.

## VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.19; R645-301-320.

**Analysis:**

The MRP contains a vegetation community-type survey of the reference area in Trail Canyon conducted under the guidance of Mel Coonrod in 1982 and 1983 (App. 3-A). The MRP also contains surveys conducted by Patrick Collins for the tank seam access road reference area (App.3-A) and shower house pad site and reference area (App. 3-C). The Permittee presents information in the Environmental Information section apparently related to these surveys. Although this information is somewhat disconnected, it provides scope, methods, equations, and results.

The newly formatted MRP has a section titled "Mohrland Vegetation", which was left intentionally blank.

**Findings:**

The Division considers information in the application adequate to meet the minimum requirements of Vegetation Resource Information section of the Environmental Resource Information regulations.

## FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.21; R645-301-322.

**Analysis:**

The Permittee addressed a previous deficiency to incorporate pages that were missing from the newly formatted version of the MRP. The newly formatted MRP now includes the methodology for aquatic resources data collection, results for terrestrial resources, wildlife resources, threatened and endangered species, raptors, and information on expected impacts of mining operations on fish and wildlife. The names of the consultants that managed the surveys and the dates of the surveys are not included.

**Findings:**

The Division considers information in the application adequate to meet the minimum requirements of Fish and Wildlife Resource Information section of the Environmental Resource Information regulations.

**LAND-USE RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.22; R645-301-411.

**Analysis:**

The Permittee included the missing information as requested from the previous TA.

**Findings:**

The Division considers information in the application adequate to meet the minimum requirements of Land-use Resource Information section of the Environmental Resource Information regulations.

**MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

**Analysis:**

The newly formatted MRP includes all biology-related maps.

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**Findings:**

The Division considers information in the application adequate to meet the minimum requirements of Maps, Plans, and Cross Section Resource Information section of the Environmental Resource Information regulations.

## OPERATION PLAN

### PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: 30 CFR784.17; R645-301-411.

**Analysis:**

There are no public parks within the permit area.

The Permittee did not add new information to this section. The newly formatted MRP, however, is missing related information from the following pages:

Hardcopy Pages	Related Information
4-10	Effect of operation on adjacent and onsite land use.
4-10	Mitigation of effects of operation. Section referenced in other chapters of newly formatted MRP.

The MRP states that the historic resource site 42EM1572 is the only site within the permit area that meets the National Register Criteria of Eligibility.

**Findings:**

The Division considers information in the application adequate to meet the minimum requirements of Protection of Public Parks and Historic Places section of the Operation Plan regulations.

### FISH AND WILDLIFE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.



## Analysis:

The Permittee somewhat addressed the deficiency to incorporate pages that were missing from the newly formatted version of the MRP. This amendment includes slightly more discussion on possible impacts to elk, mule deer, cougars, black bears, cottontails, and furbearers (pg. 3-43 through 3-45) than the previous amendment. The discussions on bobcats and small mammals, however, are still missing.

There are a few comments that state that surface disturbance will cause little impact to wildlife. These comments are no longer current and may be incorrect because they were based on the degree of underground mining and area of surface disturbance back in 1990. Similarly, the MRP includes a discussion on possible impacts to raptors and amphibians. The MRP refers the reader to the raptor survey, but raptor surveys are inadequate to address expected impact to raptors.

Although the Permittee did not fully address the previous deficiency, the Division will not reissue the same deficiency. The missing information from pages 10-14 through 10-21 may be necessary to include in the current MRP, but will require a technical review to determine how to proceed. In the near future, the Division will require the Permittee to update this section by providing the missing information, removing outdated comments relating to impact, and providing updated supporting letters from DWR.

The eMRP provides a brief agenda for annual employee training on coal mining and its possible impacts to wildlife as well as mitigation practices.

The eMRP discusses steps to take in case of escarpment failure (pg. 3-52).

## Findings:

The Division considers information in the application adequate to meet the minimum requirements of Fish and Wildlife Information section of the Operation Plan regulations. However, the Permittee did not fully address the previous deficiency related to missing information. The Division will not reissue the same deficiency at this time. The missing information from pages 10-14 through 10-21 may be necessary to include in the current MRP, but will require a technical review to determine how to proceed. In the near future, the Division will require the Permittee to update this section by providing the missing information, removing outdated comments relating to impact, and providing updated supporting letters from DWR.. This issue does not relate to simply reformatting of the MRP, therefore, DOGM did not include it as a deficiency for this amendment.

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## VEGETATION

Regulatory Reference: R645-301-330, -301-331, -301-332.

### Analysis:

The newly formatted MRP includes all interim reclamation components mentioned in the older version including a earth-moving plan, hydromulch application rates, seeding plan with species mix, and monitoring plan.

Table 3-3 provides a species list of the interim seed mix with planned application rates. The rates are in units of pure live seed - pounds per acre. Seed weight differs among species, therefore, the unit pounds per acre does not provide an accurate number of plants that may actually develop. Providing PLS per square foot is much more descriptive, which helps the Division determine if planned seeding rate is adequate for coverage. In the near future, the Division will require the Permittee to provide a planned application rate in pure live seed per square foot. The total should not exceed 100-150 pure live seed per square foot.

The interim seed mix includes five grasses and a cover crop. This seed mix originally included alfalfa, which the Permittee removed as requested.

The Permittee stated that vegetated areas adjacent to the disturbed areas are protected from coal fines by a variety of mitigation methods. However, one area within an undisturbed area below the Upper Storage Pad is apparently accumulating coal fines. The Permittee has not evaluated the impact of these coal fines on vegetation. The Division is currently working with the Permittee to incorporate best management practices to prevent and clean up unintended deposition of coal fines.

### Findings:

The Division considers information in the application adequate to meet the minimum requirements of Vegetation section of the Operation Plan regulations. In the near future, the Division will require the Permittee to provide a planned application rate in pure live seed per square foot as requested in the previous TA. Because this issue does not relate to reformatting of the MRP, DOGM will not reissue it as a deficiency for this amendment.

## RECLAMATION PLAN

## GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

### Analysis:

The Reclamation chapter of the newly formatted MRP includes a three-phase plan, timetable, revegetation species and seed mix application rates, planting methods, mulching techniques, and revegetation success standards. The three-phase reclamation plan includes:

- Earth moving.
  - Recontouring of area.
  - Smooth contouring of existing soil.
  - Creating small indentations with a grouser.
- Seeding and mulching: drill or broadcast seeding.
- Monitoring.

Overall, the sequence of methods and application rates of mulch, fiber, and tackifier are somewhat confusing. There are many paragraphs discussing final reclamation in the Operation section and paragraphs discussing interim reclamation in the Reclamation Plan - Revegetation section. In the near future, the Division will require the Permittee to provide a clear plan presenting interim and final reclamation methods, steps, and application rates. *The italicized paragraphs below present other issues that the Permittee will need to start considering.*

*The interim and final reclamation plan, in both MRP formats, are lacking the use of deep gouging and noxious weed-free hay/straw. The Permittee plans to use fiber matting for steep areas (pgs. 3-59, Mulching Techniques and 3-65, Revegetation: Mulching and Other Soil Stabilizing). Recently, however, the Permittee tried deep gouging on a steep slope that may prove successful. The plan should reflect plans showing possible changes in technique to use gouging for all sites including steep slopes.*

*Incorporating hay/straw (especially hay) during gouging is the current standard treatment for soil stability. The Permittee must include the use of deep gouging with incorporation of noxious weed-free hay/straw to bring the interim and final reclamation plans to current standards (R645-301-333). The Permittee may refer to the Vegetation Guidelines for methods and application rates.*

*The final reclamation plan mentions the application of wood fiber/hay/straw as an amendment (pg. 3-59) and a mulch (pg. 3-65). One of the goals of incorporating hay/straw*

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during gouging is to amend the soil with organic material. Hay is better than straw as a soil amendment because it has a higher N:C ratio. The Permittee may decide to use hay rather than straw.

One of the goals of using a mulch following seeding is to provide surface protection from rain and wind. The MRP states the use of wood fiber, hay, straw, and fiber matting as possible mulches. The Permittee plans to hydromulch at rate of 120 pounds per acre on slopes less than 2:1 and use fiber matting for steeper slopes (pg. 3-59). The plan is less clear on page 3-65, which mentions a variety of possible mulches and does not provide a rate. It is unclear when the Permittee plans to use hay or straw as mulch and at what rate.

The Vegetation Guidelines recommends the following:

- Hay/straw: noxious weed free
  - Usually applied at time of gouging.
  - Applied at a rate of 0.5 to 1 ton per acre.
- Wood fiber mulch:
  - Applied during hydroseeding.
  - Applied at a rate of 0.5 to 1 ton per acre.
- Tackifier: Applied according to manufacturer instructions.
- Control matting: Follow manufacture recommendations.

The Permittee must use of adequate hay/straw, wood fiber mulch, and tackifier to bring the plan to current standards (R645-301-333).

The last step of site preparation includes the application of a tackifier over the wood fiber mulch at the rate of 60 pounds per acre (pg. 3-65). The Permittee, however, is not clear whether they will only apply the tackifier only in coordination with application of a wood fiber. The Permittee must clarify reclamation plans.

Tables 3-4 and 3-8 show the suggested ratios of tackifier for hydroseeding. The amount of tackifier varies with slope from 14 to 64 degrees and ranges from 60 to 160 pounds of tackifier per ton of fiber mulch. There is a reference to the use of hydromulch at rate of 1,500 to 2000 pounds per acre.

The Permittee mentions using “weed free” material (pg. 3-59). Product may be certified as “noxious weed free”, but is rarely weed free. The MRP should accurately reflect the type of product planned for reclamation.

## Findings:

The Division considers information in the application adequate to meet the minimum requirements of General Requirements section of the Reclamation Plan regulations. In the near future, the Division will require the Permittee to provide a clear and updated plan presenting

reclamation methods, steps, and application rates. *The italicized paragraphs above present some of the issues that the Permittee will need to start considering.* These issues do not relate to reformatting of the MRP, therefore, DOGM did not include them as deficiencies for this amendment.

## POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

### Analysis:

The Permittee did not add new information to this section. The newly formatted MRP, however, is missing related information from the following pages:

Hardcopy Pages	Related Information
4-15 through 4-20	Financial feasibility and attainment, final surface configuration (section referenced in Chapter 9 of newly formatted MRP), compatibility with surrounding land uses, compatibility with land use policy and plans.
4-20 through 4-24	Safety, environmental protection, pollution control compliance, socioeconomic considerations, service areas (also Table 4-2), growth capability, and labor forces (also Table 4-3).

Most of the information from pages 4-15 through 4-20 related to compatibility with land use policy and plans. Specifically, the Permittee left out text that discussed management objectives relating to: vegetation, range, soil, mineral activities, archeology/paleontology, timber, fire, roads, and recreation.

The Permittee states that the postmine land use is designated for grazing, wildlife habitat, and some recreation.

### Findings:

The Division considers information in the application adequate to meet the minimum requirements of Postmining Land Uses section of the Reclamation Plan regulations.

## PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

Regulatory Reference: 30 CFR Sec. 817.97; R645-301-333, -301-342, -301-358.

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**Analysis:**

The Permittee explains that there is no impact to perennial waters of the permit area (pg. 10-22). The newly formatted MRP further details possible impacts to perennial waters. Page 3-28 states that there are no “high quality streams” in the surface operation areas, hence the Permittee expects little impact to aquatic life. The Permittee supports this expectation with the following:

- Huntington Creek is the closest high quality stream to the permit area.
- Huntington Creek is 1.5 miles from the nearest surface operation site.
- Co-Op’s sediment control structure serves to protect impact to Huntington Creek.

The Permittee does not plan to submit a mitigation plan for Bear Creek at this time (pg. 3-28).

Refer to Operations for discussion on expected impacts to wildlife.

**Findings:**

The Division considers information in the application adequate to meet the minimum requirements of Protection of Fish, Wildlife, and Related Environmental Values section of the Reclamation Plan regulations.

**CONTEMPORANEOUS RECLAMATION**

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

**Analysis:**

Information same as presented in Operations.

**Findings:**

The Division considers information in the application adequate to meet the minimum requirements of Contemporaneous Reclamation section of the Reclamation Plan regulations.

**REVEGETATION**

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

## Analysis:

Page 3-50 (Reclamation – Revegetation) states that riparian areas will not receive a seed mix strictly specified as “Riparian”. Rather, these sites will receive a pinyon-juniper-grass seed mix along with woody plant seedlings. The plan presents two tables showing seed mixes: Table 3-5 provides the “Recommended Seed Mix, Riparian-Creek Bottom”, while Table 3-6 provides the “Recommended Seed Mix, Pinyon-Juniper-Grass”. In the near future, the Division will require the Permittee to clarify the table titles. It seems that the Permittee should replace the wording in Table 3-5 to reflect seedling species and not “seed mix”.

Reclamation of the riparian sites will include planting of seeds (Table 3-6) and seedlings (Table 3-5). The table includes directions for the collection of nearby willow seedlings. The Division no longer recommends removing plant material from surrounding riparian areas because of possible impacts to riparian areas during the collection process. There are dependable sources for nursery stock available in Utah. In the near future, the Division will require the Permittee to remove comments relating to the removal of woody plant material on site.

The name of the final reclamation seed mix is “Recommended Seed Mix, Pinyon-juniper-grass” (Table 3-6). The table provides a list of the native species and planned application rates. The rates are in units of pure live seed - pounds per acre. In the near future, the Division will require the Permittee to provide a planned application rate in pure live seed per square foot. The total should not exceed 100-150 pure live seed per square foot.

The Permittee plans to broadcast seed and plant seedlings using the following methods: 1) Broadcast seeding either by hand or using the hydroseed method and 2) Planting seedlings in the spring or fall within two years following seeding. The Permittee provides a detailed description of planting methods for seedlings. One suggestion is to prepare hole size following current recommended practices: 1) Width: approximately 2-3 times the width of the root ball and 2) Depth: approximately equal to the length of the root ball.

The newly formatted MRP also provides discussion on success standards for revegetation and protection of wildlife. The Permittee must correct the reference to Table 3-7 (pg. 3-64; Revegetation: Mulching and other soil stabilizing) to reflect the correct table number (Table 3-4) as requested in deficiency R645-301-121.

## Findings:

The Division considers information in the application adequate to meet the minimum requirements of Revegetation section of the Reclamation Plan regulations. In the near future, the Division will require the Permittee to: Clarify the title for Table 3-6 • Remove comments relating to the removal of willow plant material on site • Provide a planned application rate in pure live seed per square foot. Furthermore, the Permittee provides a detailed description of

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planting methods for seedlings. The Division recommends adopting current recommended practices as described above. These issues do not relate to reformatting of the MRP, therefore, DOGM did not include them as a deficiencies for this amendment.

**RECOMMENDATIONS:**

Conditionally approve the newly formatted MRP. The Permittee will need to work with the Division to prepare a Confidential Binder on 9/19/05.

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